VX-VER522 WLAN VDSL2 Router
User Manual

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Content

1 Overview

Thank you for choosing our product. The VX-VER522 is a Wireless VDSL router combining an VDSL modem, an 802.11n wireless router ,a 4-port switch and an USB port in one unit, bringing high-speed wireless Internet connection to a home or office.

1.1 Features

1.1.1 Data Rate

- Downstream data rate up to 100 Mbps
- Upstream data rate up to 50Mbps

1.1.2 VDSL Compliant

- ITU G.992.1 (G.DMT)
- ITU G.993.2 (G.vdsl2) (Profile 8a, 8b, 8c, 8d, 12a,12b and 17a)
- ITU G.992.2 (G.Lite)
- ITU G.994.1 (G.hs)
- ITU G.992.3 (G.DMT.BIS)
- ITU G.992.4 (G.lite.bis)
- ITU G.992.5
- Compatible with all T1.413 issue 2 (full rate DMT over analog POTS), and CO DSLAM equipment

1.1.3 Wireless

- Fully IEEE 802.11n compatible.
- Wireless data rate up to 300Mbps
- Operating in the unlicensed 2.4 GHz ISM band
- Multi-SSID
- Supports 64/128 bits WEP security and user authentication

1.1.4 Network Protocol & Features

- Ethernet to ADSL Self-Learning Transparent Bridging
- Internet Control Message Protocol (ICMP)

- IP Static Routing
- Routing Information Protocol (RIP, RIPv2)
- Network Address Translation (NAT)
- Virtual Server, Port Forwarding
- Dynamic Host Configuration Protocol (DHCP)
- DNS Relay, DDNS
- IGMP Proxy
- Simple Network Time Protocol (SNTP)
- VPN pass-through (IPSec/PPTP/L2TP)
- Parent control

1.1.5 ATM Capabilities

- RFC 1483 Multi-protocol over ATM “Bridged Ethernet” compliant
- RFC 2364 PPP over ATM compliant
- RFC 2516 PPP over Ethernet compliant
- ATM Forum UNI3.1/4.0 PVC – Support up to 16 PVCs
- VPI Range: 0-255
- VCI Range: 32-65535
- UNI 3.0 & 3.1 Signaling
- ATM AAL5 (Adaption Layer type 5)
- OAM F4/F5

1.1.6 FIREWALL

- Built-in NAT
- MAC Filtering
- Packet Filtering
- Stateful Packet Inspection (SPI)
- Denial of Service Prevention (DoS)

- DMZ

1.1.7 Management Support

- Web Based GUI
- Upgrade or update via FTP/HTTP
- Command Line Interface via Telnet
- Diagnostic Test
- Firmware upgradeable for future feature enhancement

1.1.8 Operating System Support

- WINDOWS 98\98 SE\ME\2000\XP\VISTA\7
- Macintosh
- LINUX

1.1.9 Environmental

- Operating humidity: 10%-90% non-condensing
- Non-operating storage humidity: 5%-95% non-condensing

1.2 Packet Contents

The packet contents are as the following:

- DSL ROUTER x 1
- External Splitter x 1
- Power Adapter x 1
- Telephone Line x 1
- Ethernet Cable x 1
- Antenna x 2
- Base x 1

1.3 System Requirements

Before using this ROUTER, verify that you meet the following requirements:

- Subscription for DSL service. Your DSL service provider should provide you with at least one valid IP address (static assignment or dynamic assignment via dial-up connection).
- One or more computers, each contains an Ethernet 10/100M Base-T network interface card (NIC).
- A hub or switch, if you are connecting the device to more than one computer.
- For system configuration using the supplied web-based program: A web browser such as Internet Explorer v5.0 or later, or Netscape v4.7 or later.

1.4 Factory Defaults

The device is configured with the following factory defaults:

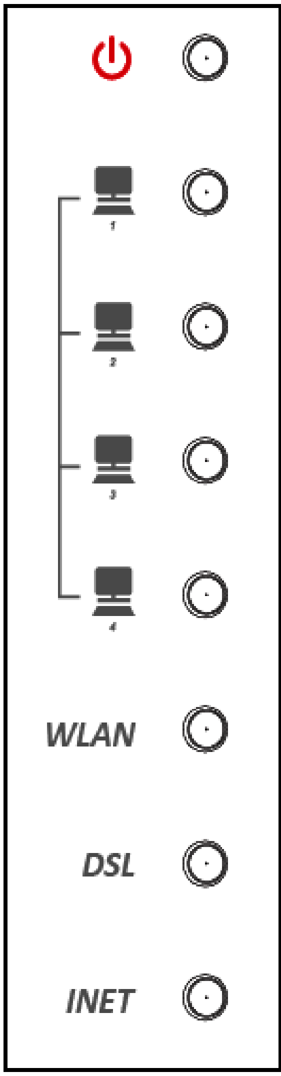
- IP Address: 192.168.1.1
- Subnet Mask: 255.255.255.0
- SSID: WLAN
- Encapsulation: RFC 2516 LLC
- VPI/VCI: 0/35

1.5 Warnings and Cautions

- Never install telephone wiring during storm. Avoid using a telephone during an electrical storm. There might be a risk of electric shock from lightening.
- Do not install telephone jacks in wet locations and never use the product near water.
- To prevent dangerous overloading of the power circuit, be careful about the designed maximum power load ratings. Failure to comply with the guideline could result in a hazardous situation.
- Please note that telephone line on modem must adopt the primary line that directly outputs from the junction box. Do not connect Router to extension phone. In addition, if your house developer divides a telephone line to multi sockets inside the wall of house, please only use the telephone that has connected with the splitter of DSL Router when you access the Internet.

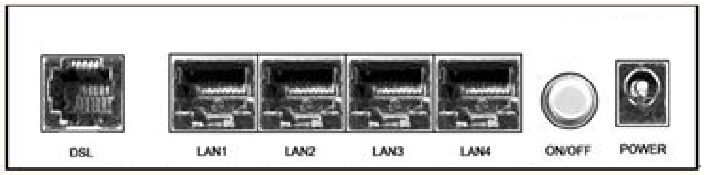
2 Hardware Description

Front Panel



LED	Color	Function
POWER	Green	On: Power Off: No power
LAN1,2,3,4	Green	On: LAN link established and active via LAN port Blinking: DSL data activity occurs Off: No LAN link via LAN port
WLAN	Green	On: The wireless module is ready and idle Blinking: Data transmitting or receiving over WLAN Off: The wireless function is off
DSL	Green	On: DSL link established and active Quick Blinking: DSL is trying to establish a connection Slow Blinking: No DSL link
INET	Green	ON:IP connected Blinking: Internet data activity occurs Off: No DSL connection present

Rear panel



Port	Function
DSL	Connect the device to an DSL telephone jack or splitter using a RJ-11 telephone cable
LAN1	Connect the device to your PC's Ethernet port, or to the uplink port on your hub/switch, using a RJ-45 cable(1000M)
LAN2,3,4	Connect the device to your PC's Ethernet port, or to the uplink port on your hub/switch, using a RJ-45 cable(10/100mM)
ON/OFF	Switch it on or off
POWER	Connect to the supplied power adapter

Side panel

WIFI button: Enable or disable wireless function.

Reset button: System reset or reset to factory defaults.

WPS button: A convenient way for WPS set.

3 Hardware Installation

This chapter shows you how to connect Router. In addition, it introduces the appropriate environment for the Router and installation instructions.

1. Using a telephone line to connect the **DSL** port of ROUTER to the **MODEM** port of the splitter, and using a other telephone line connect your telephone to the **PHONE** port of the splitter, then connect the wall phone jack to the **LINE** port of the splitter.

   The splitter comes with three connectors as below:

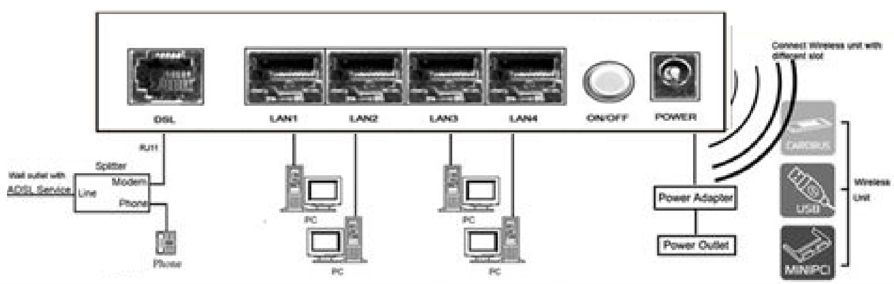
   LINE: Connects to a wall phone jack (RJ-11 jack)

   MODEM: Connects to the DSL jack of ROUTER

   PHONE: Connects to a telephone set

2. Using an Ethernet Cable to connect the LAN port of the ROUTER to your LAN or a PC with network card installed.

3. Connect the power cable to the PWR connector on ROUTER, then plug in the power adapter to the power outlet, and then press the on-off button.



Notes: Without the splitter and certain situation, transient noise from telephone can interfere with the operation of the Router, and the Router may introduce noise to the telephone line. To prevent this from occuring, a small external splitter must be connected to each telephone.

4 PC Configuration Guide

4.1 Local PC Configuration in Windows 95, 98, ME, XP

1. In the Windows task bar, click the “Start” button, point to “Settings”, and then click “Control Panel”.
2. Double-click the “Network” icon.
3. On the “Configuration” tab, select the TCP/IP network associated with your network card and then click “Properties”.
4. In the “TCP/IP Properties” dialog box, click the “IP Address” tab. Set the IP address as 192.168.1.x (x can be a decimal number from 2 to 254.) like 192.168.1.2, and the subnet mask as 255.255.255.0.
5. On the “Gateway” tab, set a new gateway as 192.168.1.1, and then click “Add”.
6. Configure the “DNS” tab if necessary. For information on the IP address of the DNS server, please consult with your ISP.
7. Click “OK” twice to confirm and save your changes.
8. You will be prompted to restart Windows. Click “Yes”.

4.2 Local PC Configuration in Windows 2000

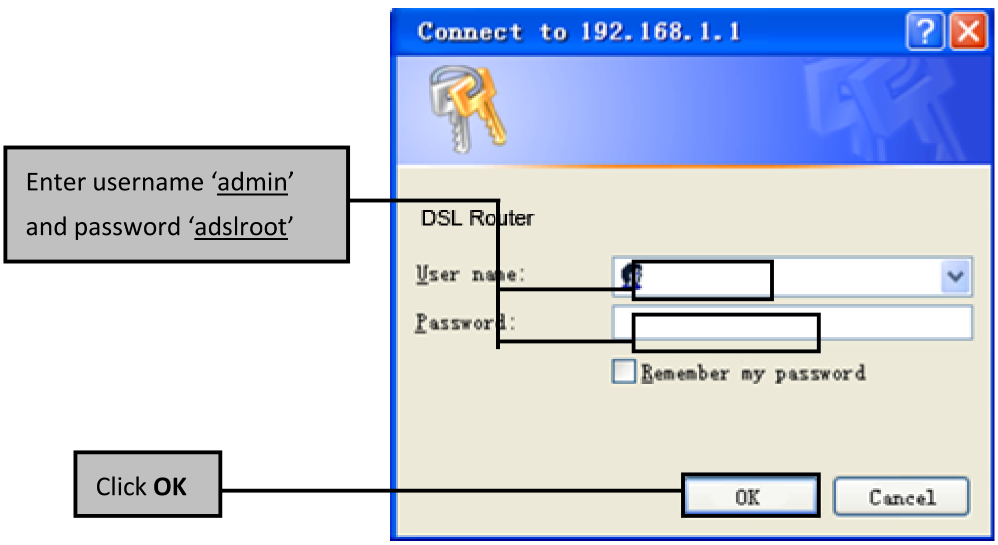
1. In the Windows task bar, click the “Start” button, point to “Settings”, and then click “Control Panel”.
2. Double-click the “Network and Dial-up Connections” icon.
3. In the “Network and Dial-up Connections” window, right-click the “Local Area Connection” icon, and then select “Properties”.
4. Highlight “Internet Protocol (TCP/IP)”, and then click “Properties”.
5. In the “Internet Protocol (TCP/IP) Properties” dialog box, set the IP address as 192.168.1.x (x can be a decimal number from 2 to 254.), and the subnet mask as 255.255.255.0 and the default gateway as 192.168.1.1. Then click “OK”.
6. Configure the “DNS” tab if necessary. For information on the IP address of the DNS server, please consult with your ISP.
7. Click “OK” twice to confirm and save your changes.

5 Web-based Management Guide

In order to use the web-based management software it will be necessary to use a computer that occupies the same subnet as the Router. The simplest way to do this for many users will be to use DHCP server that is enabled by default on the Router.

5.1 LAN setting page

Launch a web browser, such as Internet Explorer, and then use http://192.168.1.1 to log on to the setting pages.

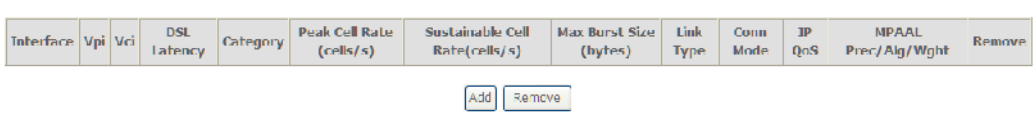


5.2 Internet Access Configuration

5.2.1 ADSL Setup

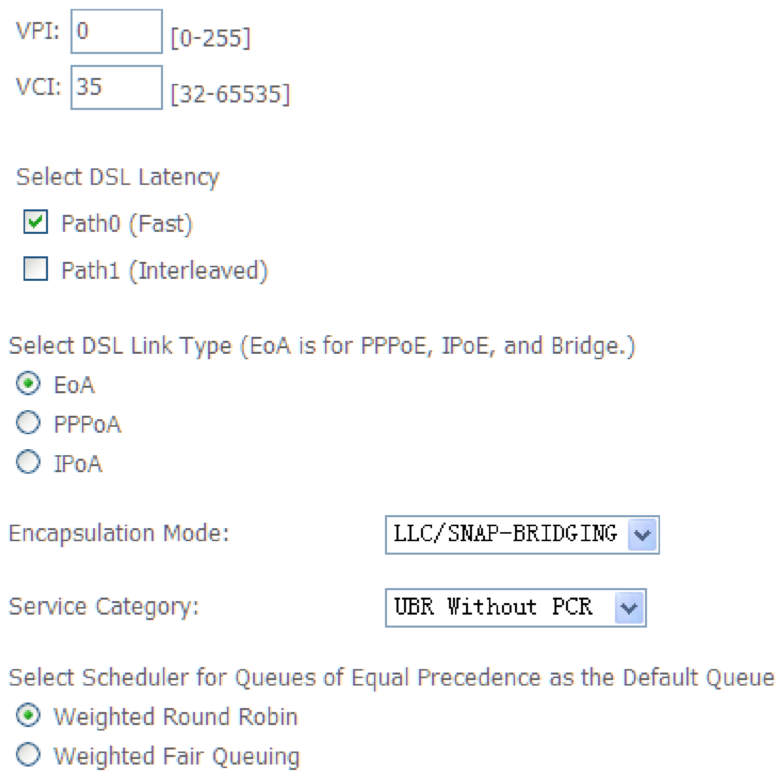
From the home page, you can find the **Advanced Setup** option on the left router configuration page.

1. From **Layer2 Interface**, click **ATM Interface**. you can set it up according to the following steps. You Choose **Add**, or **Remove** to configure DSL ATM interfaces.

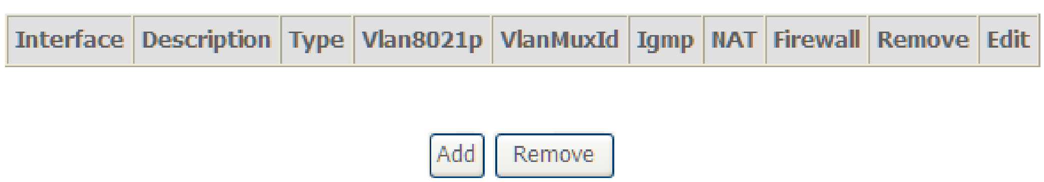


Interface	Vpi	Vci	DSL Latency	Category	Peak Cell Rate (cells/s)	Sustainable Cell Rate(cells/s)	Max Burst Size (bytes)	Link Type	Conn Mode	IP QoS	MPAAL Prec/Alg/Wght	Remove

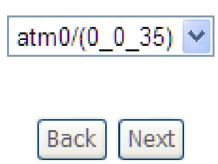
2. Click **Add** to configure PVC identifier, select DSL latency and select connection mode according to your local occasion. After the configuration, you need to click **Apply/Save**.



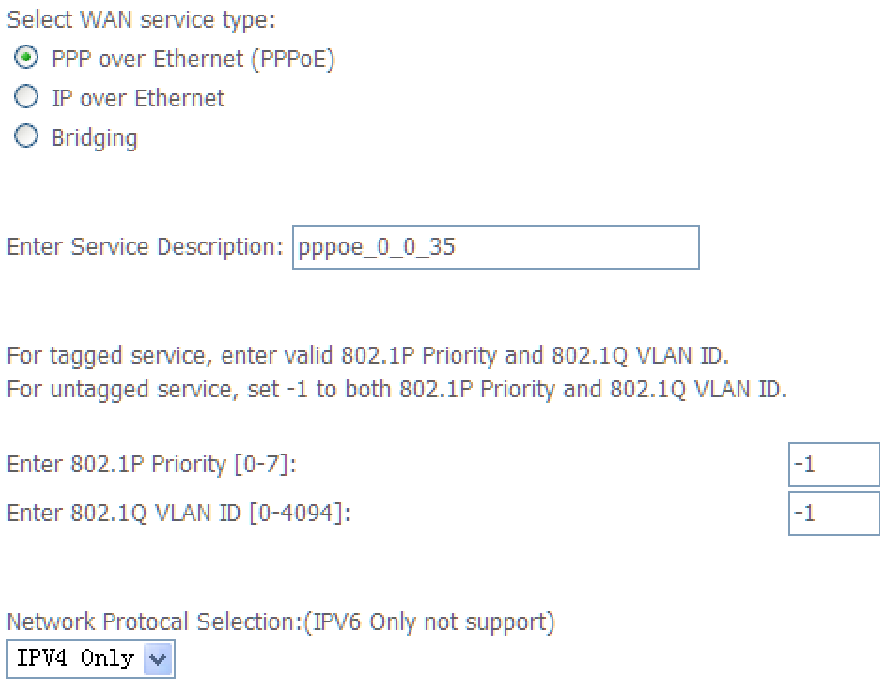
3. Click **WAN Service** from the left menu.



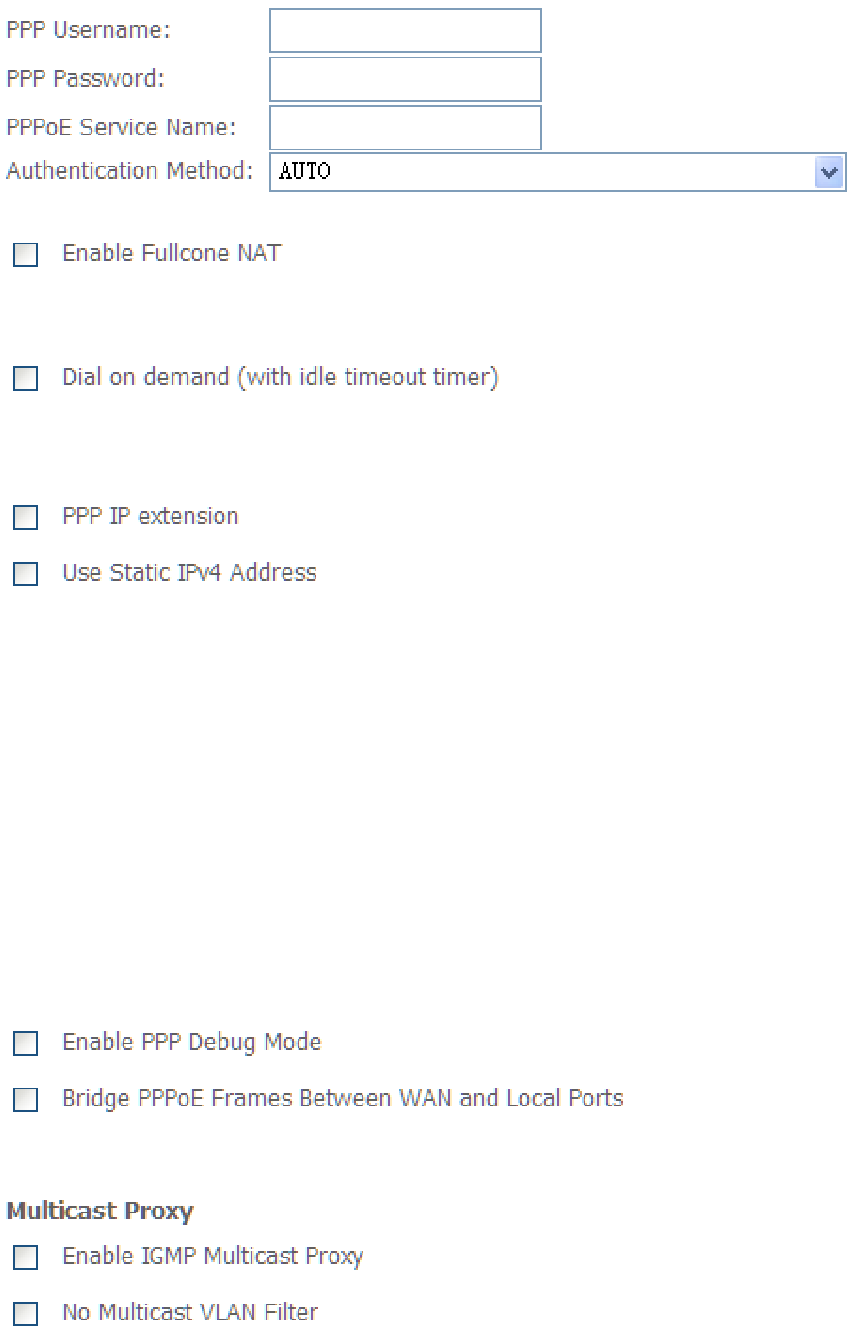
Click **Add** to select a layer 2 interface for this service and then click **Next**.



4. Choose WAN service type, just choose PPPoE for example here. You can enter your own service description here if you want and then click **Next**.



5. Input **PPP Username** & **PPP Password** and then click **Next**. The user interface allows a maximum of 256 characters in the user name and a maximum of 32 characters in the password.



PPPoE service name can be blank unless your Internet Service Provider gives you a value to enter.

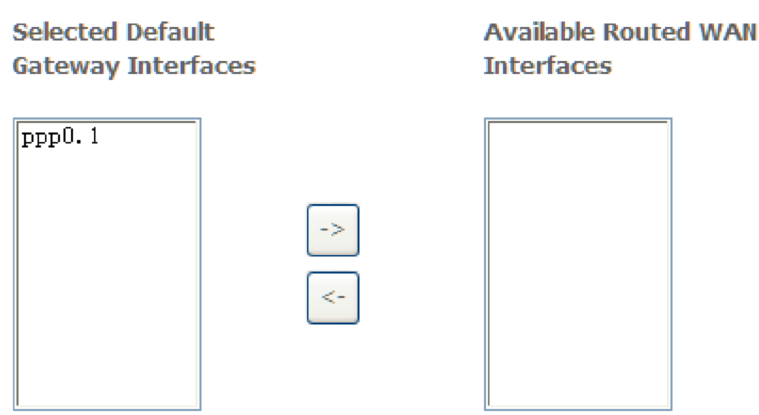
Authentication method is default to **Auto**. It is recommended that you leave the **Authentication method** in **Auto**, however, you may select **PAP** or **CHAP** if necessary. The default value for MTU (Maximum Transmission Unit) is **1500** for PPPoA and **1492** for PPPoE. Do not change these values unless your ISP asks you to.

The gateway can be configured to disconnect if there is no activity for a specific period of time by selecting the **Dial on demand** check box and entering the **Inactivity timeout**. The entered value must be between 1 minute and 4320 minutes.

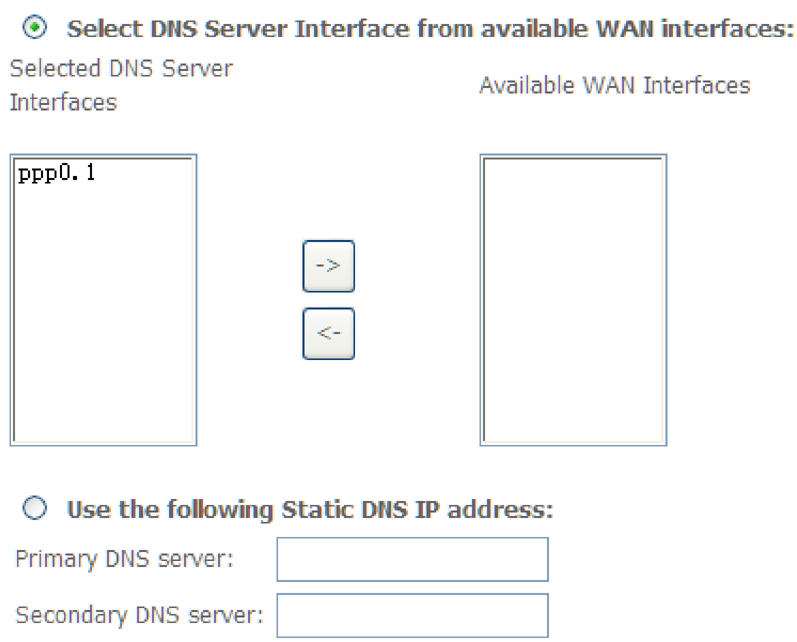
The **PPP IP Extension** is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it. If you need to select it, the PPP IP Extension supports the following conditions:

- It allows only one computer on the LAN.
- The public IP address assigned by the remote using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the computer's LAN interface through DHCP. Only one system on the LAN can be connected to the remote, since the DHCP server within the ADSL gateway has only a single IP address to assign to a LAN device.
- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The ADSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

6. Select a preferred wan interface as the system default gateway.



7. Get DNS server information from the selected WAN interface or enter static DNS server IP addresses. If only a single PVC with IPoA or static MER protocol is configured, you must enter static DNS server IP addresses.



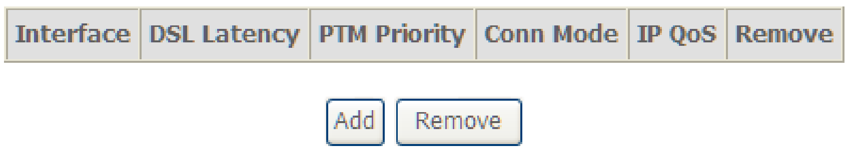
8. Make sure that the settings below match the settings provided by your ISP. Click on the **Apply/Save** button to save your configurations.

Connection Type:	PPPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Enabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

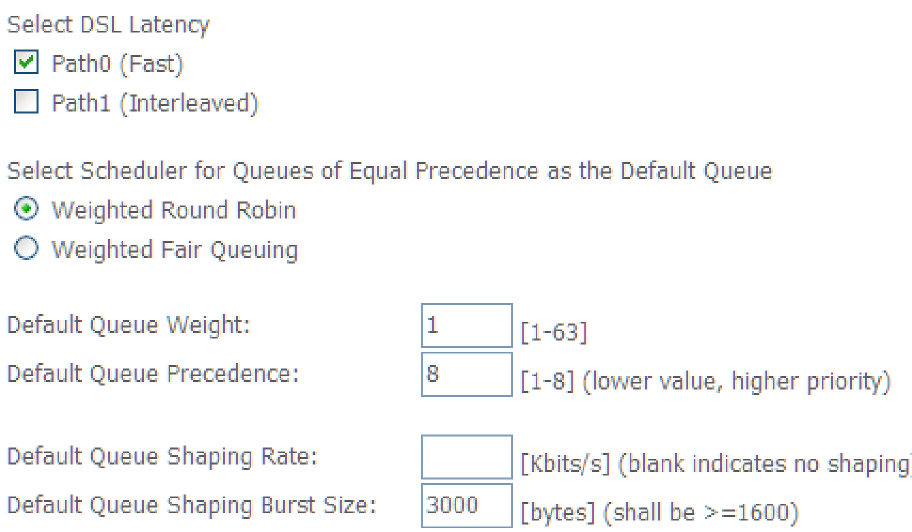
5.2.2 VDSL Setup

From home page, you can find **Advanced Setup** option on the left router configuration page.

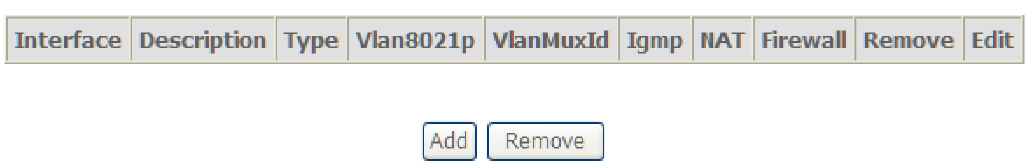
1. From **Layer2 Interface**, click **PTM Interface**. you can set it up according to the following steps. You Choose **Add**, or **Remove** to configure DSL PTM interfaces.



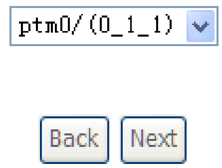
2.Click **Add** to configure **PTM Priority**, select DSL latency and select connection mode according to your local occasion. After the configuration, you need to click **Apply/Save**.



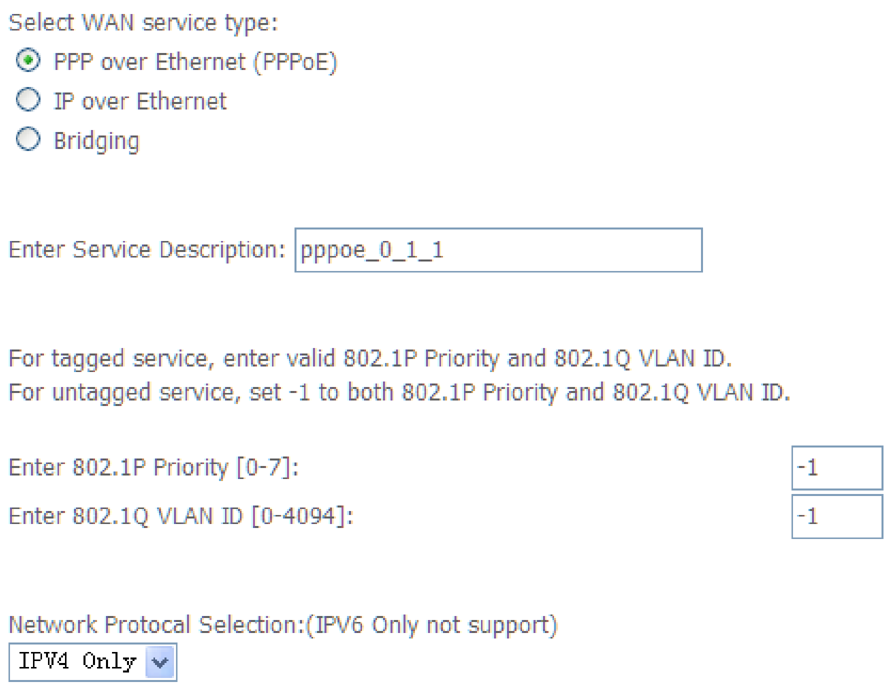
2. Click **WAN Service** from the left menu.



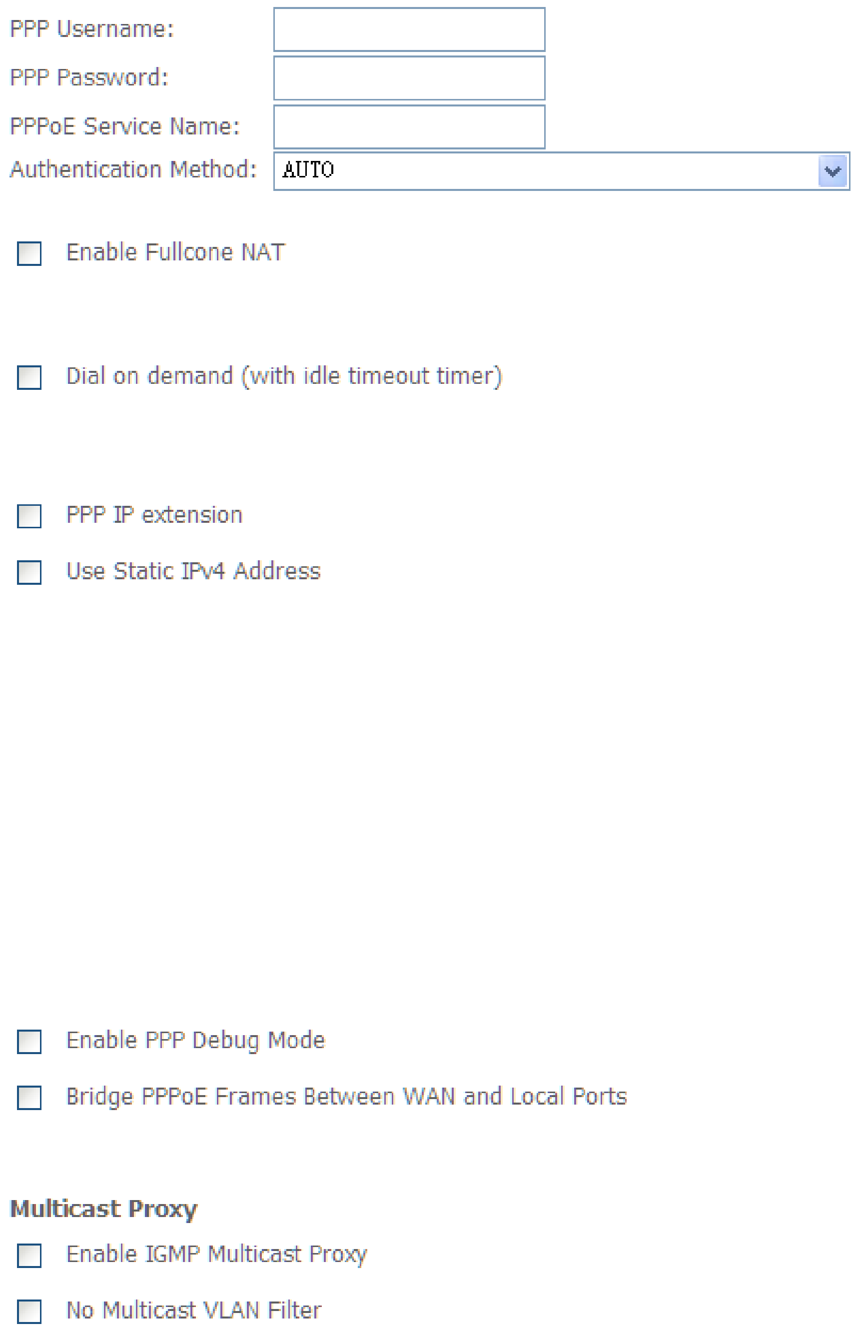
4.Click **Add** to select a layer 2 interface for this service and then click **Next**.



5. Choose WAN service type, just choose PPPoE for example here. You can enter your own service description here if you want and then click **Next**.



6. Input **PPP Username** & **PPP Password** and then click **Next**. The user interface allows a maximum of 256 characters in the user name and a maximum of 32 characters in the password.



PPPoE service name can be blank unless your Internet Service Provider gives you a value to enter.

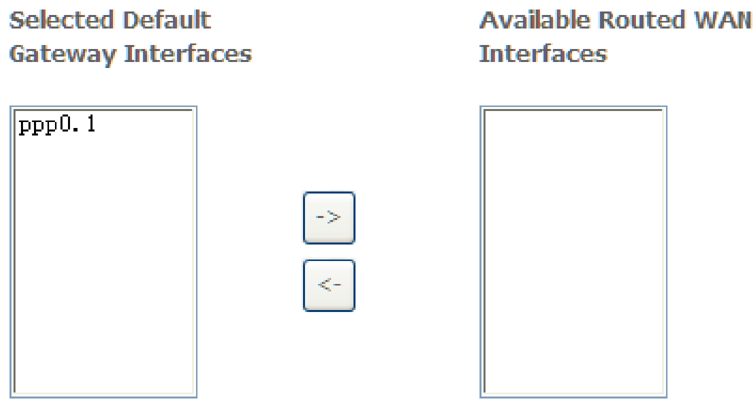
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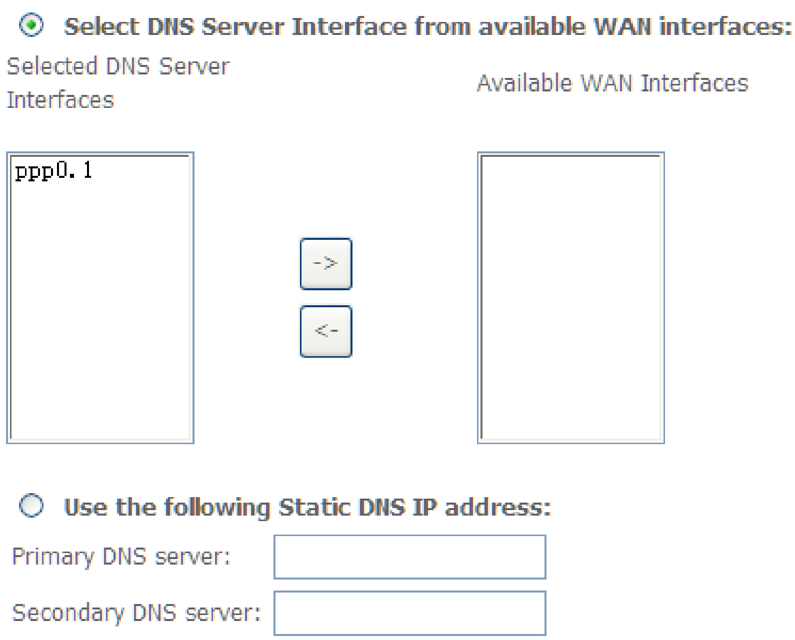
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- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The DSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

7. Select a preferred wan interface as the system default gateway.



8. Get DNS server information from the selected WAN interface or enter static DNS server IP addresses. If only a single PVC with IPoA or static MER protocol is configured, you must enter static DNS server IP addresses.



9. Make sure that the settings below match the settings provided by your ISP. Click on the **Apply/Save** button to save your configurations.

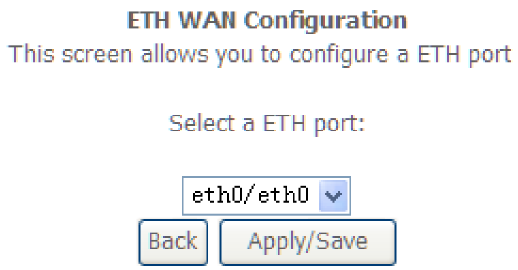
Connection Type:	PPPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Enabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

5.2.3 Router Mode Setup

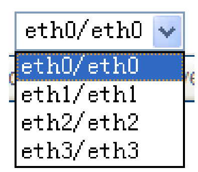
1. From **Advanced Setup**, click **Layer2 Interface** and select **ETH Interface**. Before you configure ETH WAN interface, you'd better remove all PVC settings from **ATM interface**.



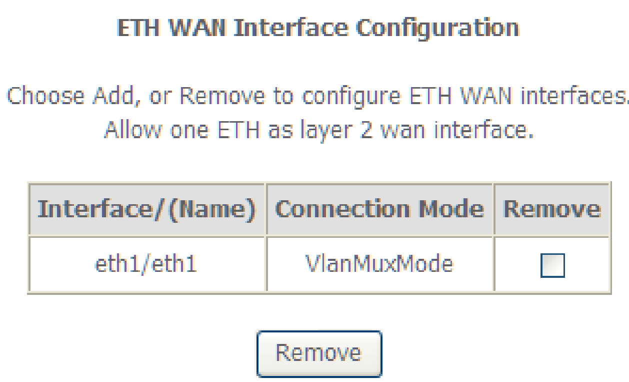
2. Click **Add** and you'll see the following screen.



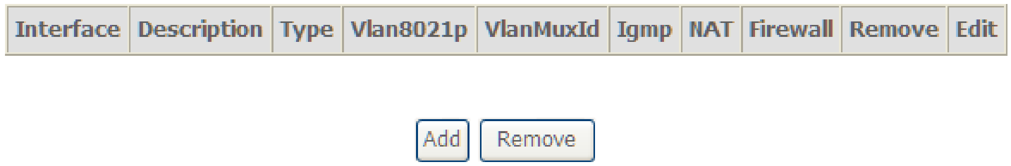
3. Select a ETH port as you will. You can select ENET1, ENET2, ENET3 or ENET4 port as the WAN interface and Default mode as connection mode.



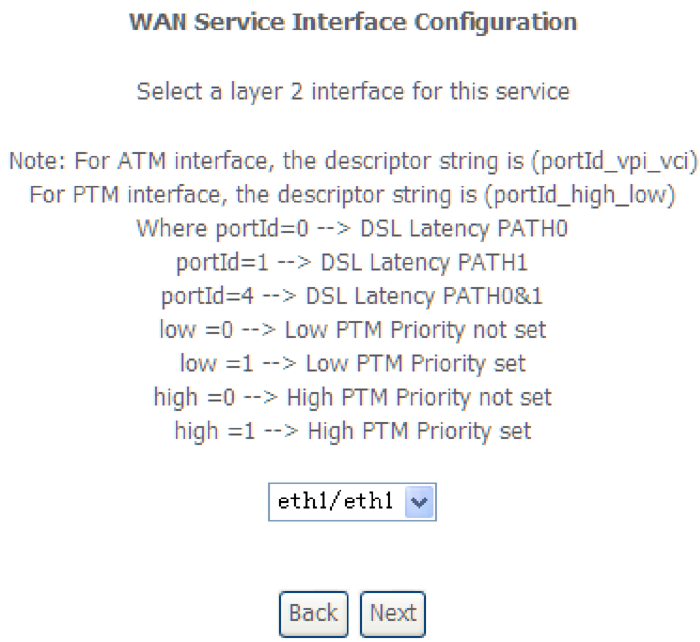
4. Click **Apply/Save** and you'll see the following screen.



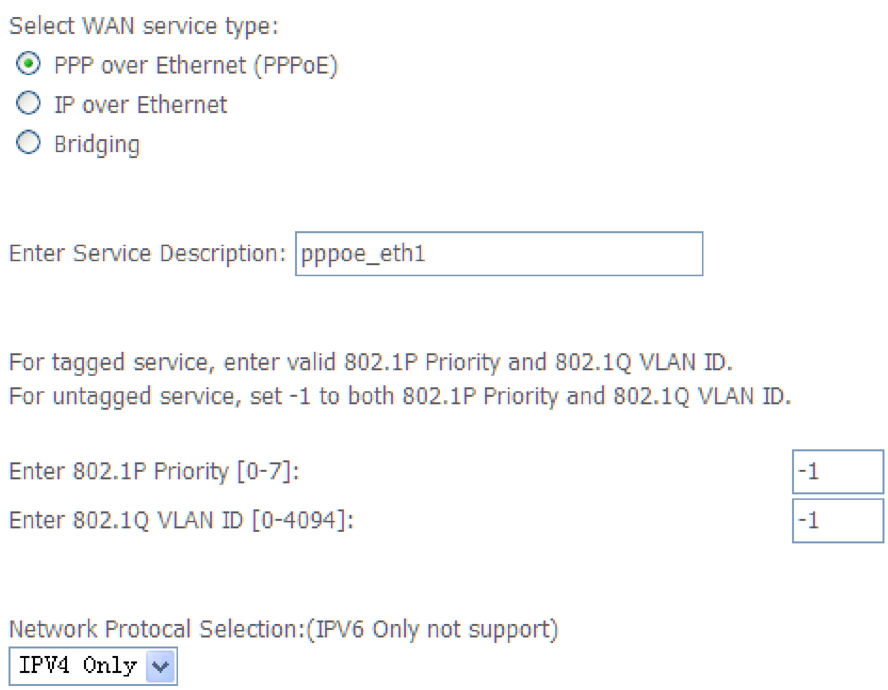
5. From **Advanced Setup**, click **WAN Service** to configure a WAN service over the interface you selected.



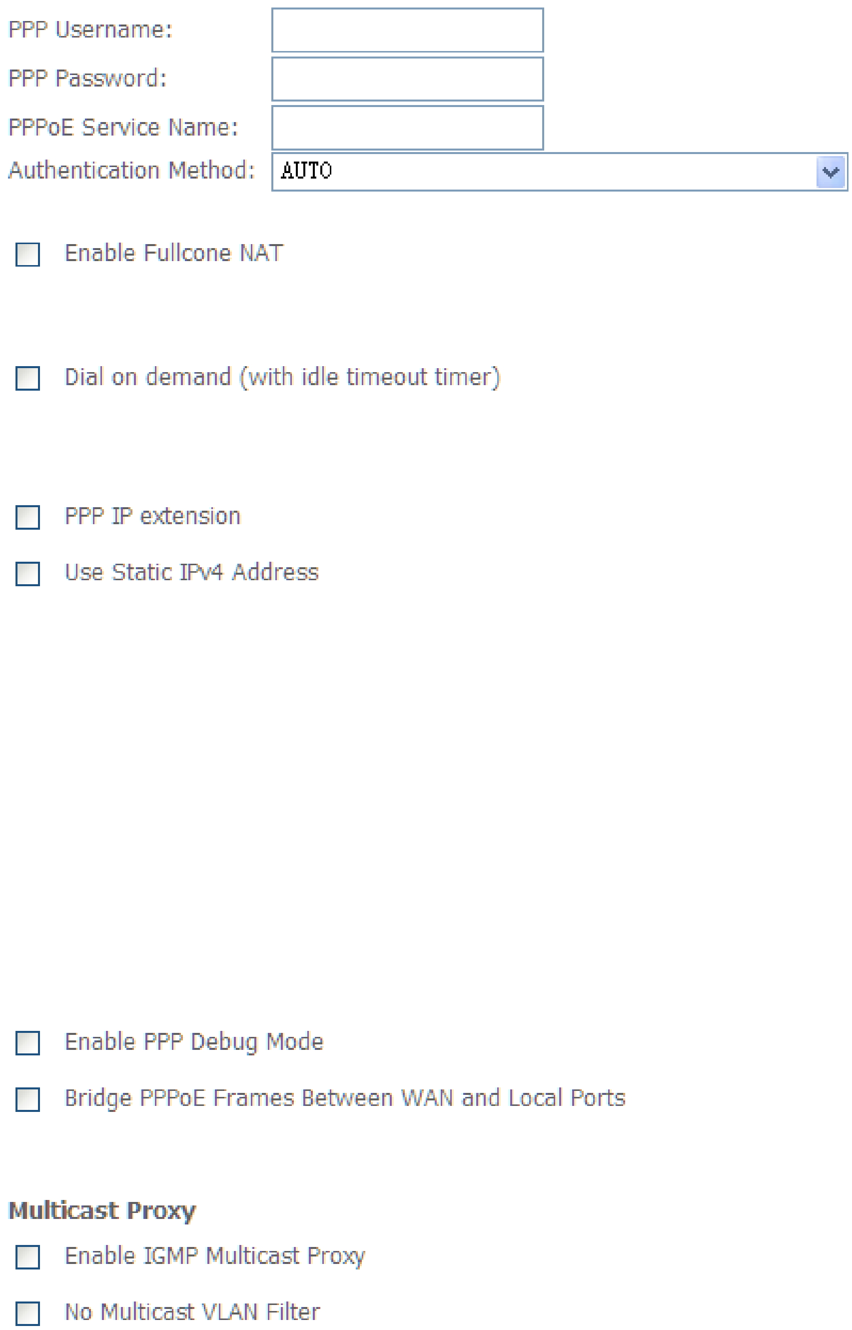
6. Click **Add** and you'll see the following screen.



7. Click **Next** and you'll see the following screen. Select PPPoE as WAN service type for example. Click **Next**.



8. Enter the user name and password that your ISP has provided to you. Click **Next**.



PPPoE service name can be blank unless your Internet Service Provider gives you a value to enter.

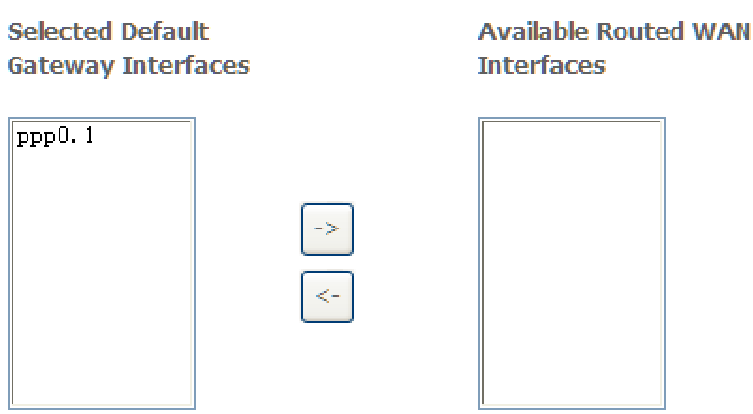
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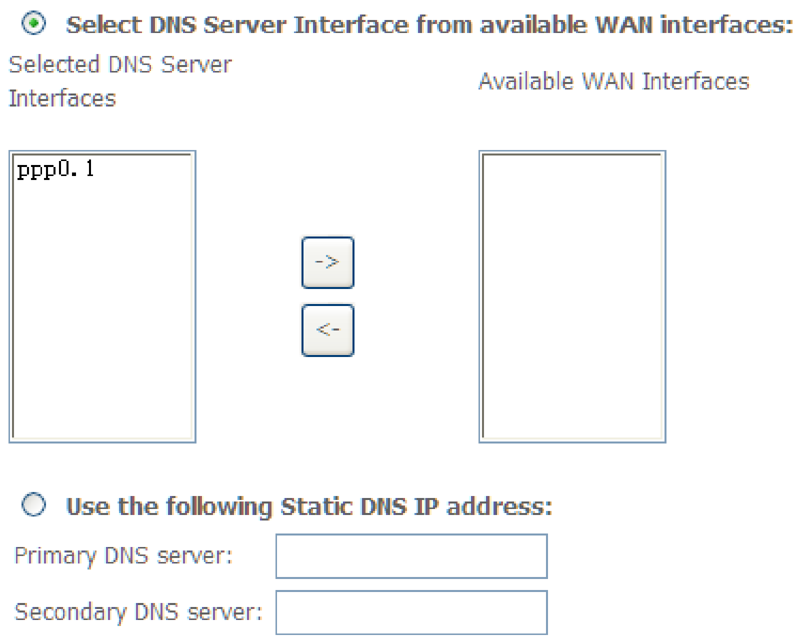
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- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The DSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

9. Select WAN interface as the system default gateway. Click **Next**.



10. Get DNS server information from the selected WAN interface or enter static DNS server IP addresses. Click **Next**.

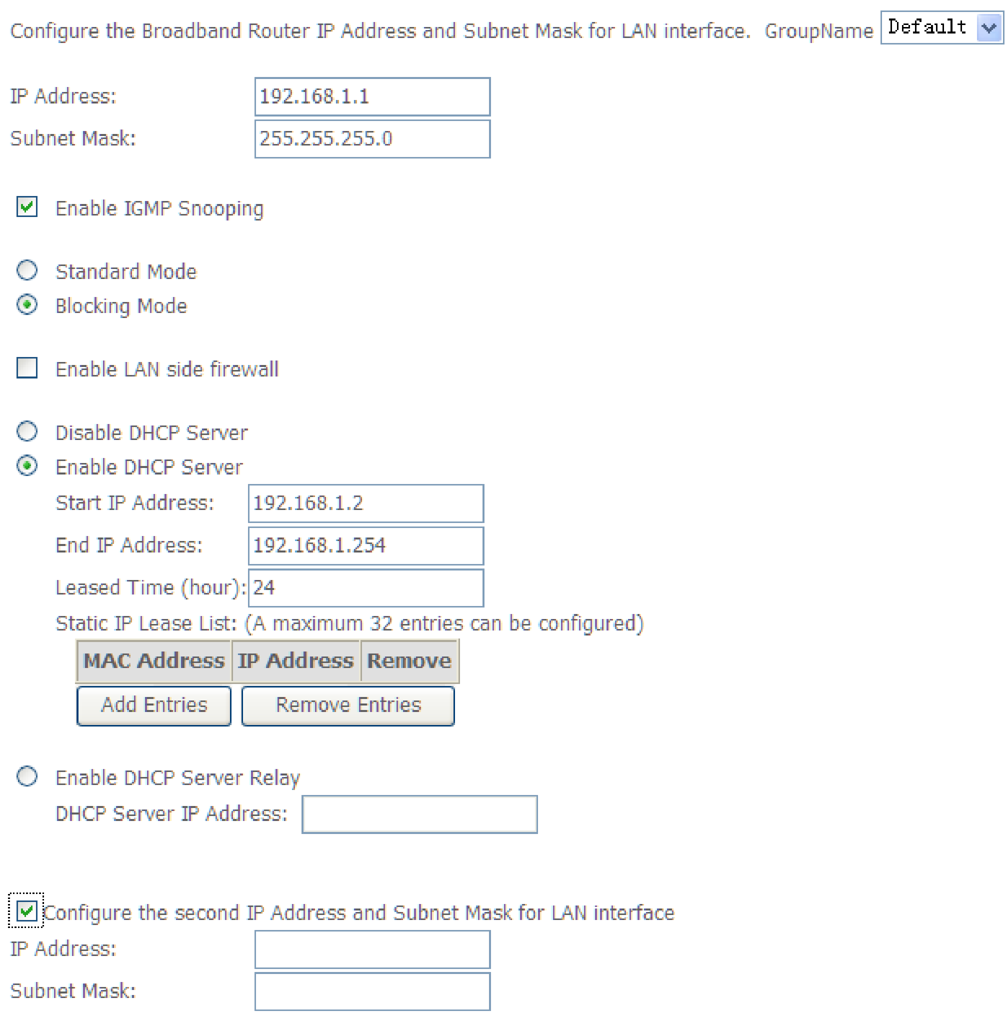


11. Make sure that the settings below match the settings provided by your ISP. Click on the **Apply/Save** button to save your configurations and reboot the DSL router.

Connection Type:	PPPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Enabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

5.2.4 LAN Settings

From **LAN**, Configure the DSL Router's IP Address and Subnet Mask for LAN interface. In this page, you can use DHCP (Dynamic Host Configuration Protocol) to control the assignment of IP addresses on your local network (LAN only).



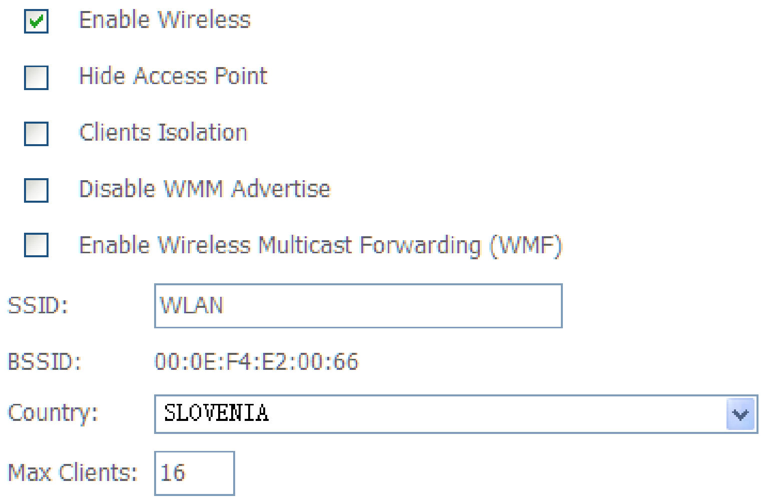
Item	Description
IP address	This is the IP address that other devices on your local network will use to connect to the modem.
Subnet mask	This defines the size of your network. The default is **255.255.255.0**.
Enable IGMP	IGMP Snooping is a method that actually "snoops" or inspects IGMP traffic on a switch. When enabled, the switch will watch for

snooping	IGMP messages passed between a host and a router, and will add the necessary ports to its multicast table, ensuring that only the ports that require a given multicast stream actually receive it.
Disable / Enable DHCP server	The DHCP server assigns an IP addresses from a pre-set pool of addresses upon request from DHCP client (e.g. your computer). Do not disable the DHCP server unless you wish to let another device handle IP address issuance on the local network.
Start / end IP address	This is the beginning and ending range for the DHCP server addresses.
Lease time	The amount of time before the IP address is refreshed by the DHCP server.
Enable DHCP server relay	If NAT is disabled and the PVC is the IPoA or static MER type, this item allows you to inform the router of another DHCP server on your LAN. To do this, disable the DHCP server on the gateway. Then input the IP address of the current DHCP server. Click **Apply** and restart the gateway.
Configure the second IP address and...	Use this feature to create a public network on your local LAN, accessible from the Internet. By assigning an address to this interface and then statically setting your LAN clients to the same network, the LAN clients are accessible from the public network (e.g. FTP or HTTP servers).

Note: If you want to cancel all modification that you do on the Router, please select from “Management⇨Setting⇨Restore Default Settings” to restore factory default settings.

5.3 Wireless setting

5.3.1 Basic



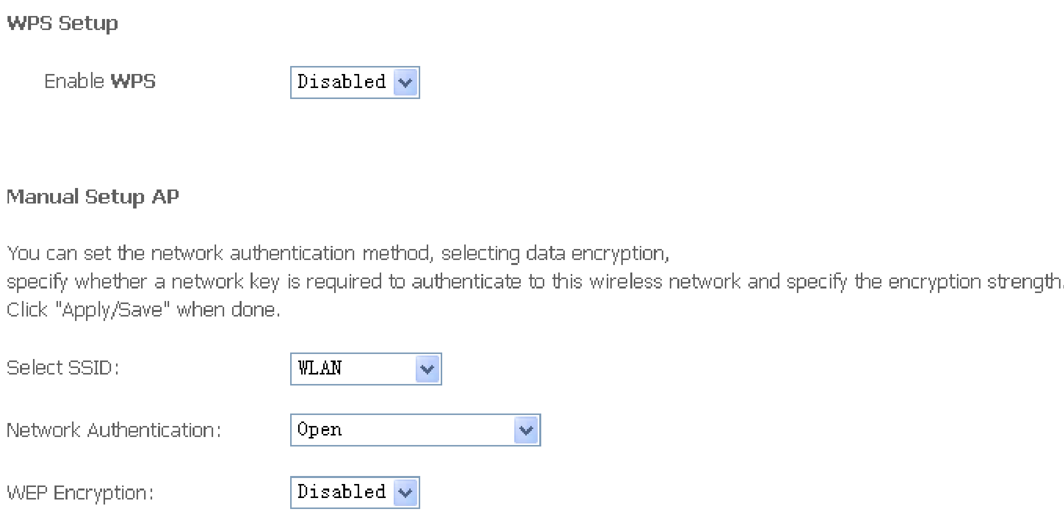
Option	Description
Enable wireless	A checkbox that enables or disables the wireless LAN interfaces. The default is to enable wireless communications.
Hide Access Point	Select Hide Access Point to protect the DSL route access point from detection by wireless active scans. If you do not want the access point to be automatically detected by a wireless station, this checkbox should be deselected. The station will not discover this access point. To connect a station to the access point, the station must manually add this access point name in it's wireless configuration. In Windows XP, go to the Network>Properties function to view all of the available access points. You can also use other software programs such as NetStumbler to view available access points.
Clients isolation	Enable this item if you don't want your wireless clients to communicate with each other.
Network name (SSID)	Enter a name for user's wireless network here. SSID stands for Service Set Identifier. This name must be between 1 and 32 characters long. The default name is **WLAN**. All wireless clients must either detect the gateway or be configured with the correct SSID to access the Internet.

BSSID	Displays the gateway's wireless MAC address. (User may need this address if user is using WDS or multiple gateways.) Click **Apply** to save changes.
Country	Drop-down menu that allows selection of specific channel.

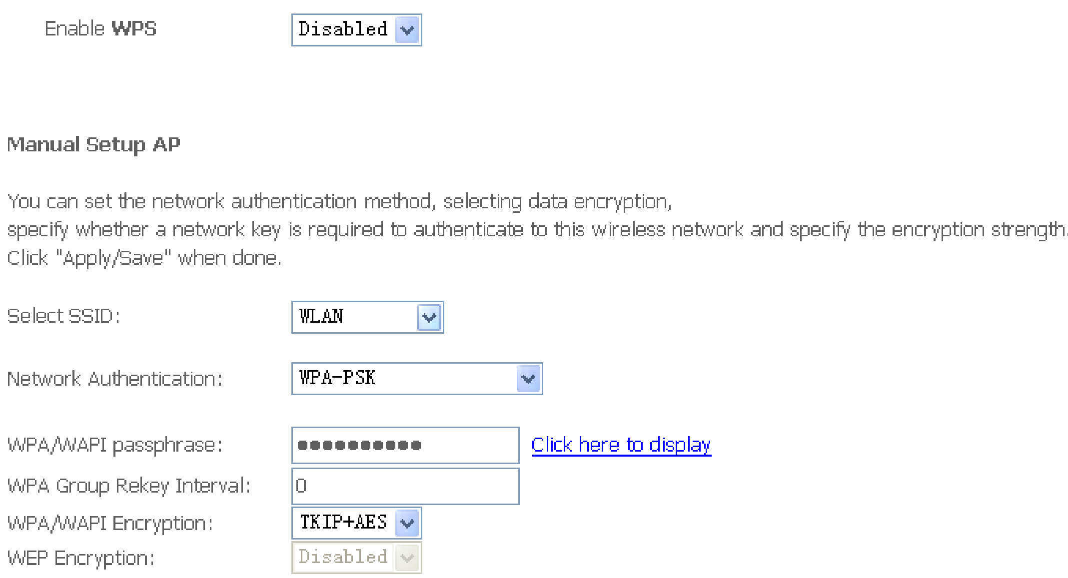
5.3.2 Security

This page allows you to configure security features of the wireless LAN interface.
You may set up configuration manually or through WiFi Protected Setup(WPS)

1. Click **Security** of **Wireless** item and you'll see the following page.



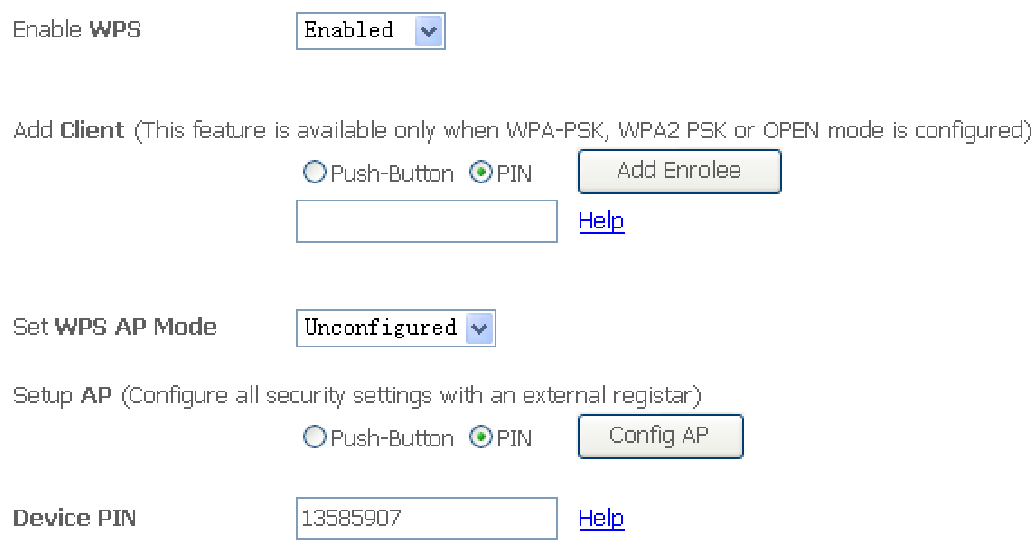
2. Configure WPA Pre-shared key as below and click **Apply/Save**.



3.Enable WPS as below.



4.Set WPS AP mode as **Unconfigured** and click **Config AP**.

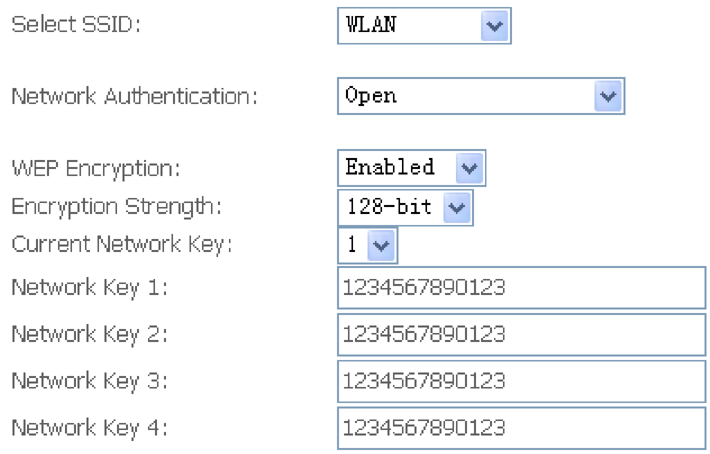


5. Set WPS AP mode as **configured** and click **Save/Apply.**

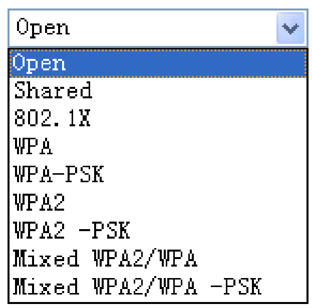
6.Now you can use a wireless adaptor with WPS function and the WPS button to connect to access the Internet.

7. To configure security features for the Wireless interface, please open Security item from Wireless menu. This web page offers nine authentication protocols for user to secure user's data while connecting to networks. There are four selections including Open, Shared, 802.1X,WPA, WPA-PSK, WPA2, WPA2-PSK, Mixed WPA-WPA2, Mixed WPA-WPA2-PSK. Different item leads different web page settings. Please read the following information carefully.

The wireless security page allows user to configure the security features of user's wireless network.



There are several security methods to choose from, depending on user's needs and the capabilities of user's wireless machines.



- **WEP open** and **WEP shared** —WEP is an encryption scheme that is used to protect user's wireless data communications. WEP uses a combination of 64-bit keys or 128-bit keys to provide access control to user's network and encryption security for every data transmission. To decode a data transmission, each wireless client on the network must use an identical 64-bit or 128-bit key. WEP is an older wireless encryption method that is not as hard to break as the more-recent WPA.

- **802.1x** — In 802.1x (also known as RADIUS), a separate machine called an authentication server receives a user ID and password. It grants or denies access based on whether the ID and password match any entries in its account list. User can optionally enable WEP encryption with this option. Because it requires a separate machine acting as the authentication server, 802.1x is most often used in business environments.

- **WPA** — WPA is a more recent encryption method that addresses many of the weaknesses in WEP. Any client capable of WPA encryption should use it instead of WEP.

- **WPA (PSK)** — This is WPA encryption combined with a *pre-shared key*

(PSK), which is a text string known only to the gateway and authorized wireless clients. The gateway rejects the login if the client's PSK does not match.

- **WPA2** — WPA2 is a more advanced encryption method than WPA. Because it is a more recent standard, some of user's wireless devices might not be able to use it.
- **WPA2 (PSK)** — This option uses WPA2 with a pre-shared key.
- **WPA2 and WPA** — This option supports WPA2/WPA encryption for devices capable of one or the other standard. The gateway automatically detects whether a particular device can use WPA2 or WPA.
- **WPA2 AND WPA (PSK)** — This has WPA2 or WPA encryption based on client abilities, as well as a pre-shared key.

After making changes, click **Apply** to save.

Appendix: Frequently Asked Questions

Q: Why are none of the LEDs are on when I power on the DSL router?
A: Please make sure you use the power adaptor attached with the DSL router package and check the connection between the AC power and DSL router.

Q: Why doesn't the DSL LED turn on after I connect the telephone line?
A: Ensure that you are using the standard telephone line (included with the package). Make sure the line is connected correctly and check if there is poor contact at each interface. Wait for 30 seconds to allow the DSL router to establish connection with the DSL operator.

Q: Why is the DSL LED flashing, both slowly and quickly, after connecting to the telephone line?
A: This means the DSL router is not able to establish a connection with Central Office. Please check carefully and confirm whether the DSL router has been installed correctly.

Q: Why doesn't the LAN LE turn on after I connect Ethernet cable?
A: Please make sure Ethernet cable is connected from the hub/PC and DSL router correctly. Then ensure that the PC/hub have been powered on.

Please make sure that you use a parallel network cable to connect the UpLink port of the hub. You can also use a parallel network cable to connect the PC. If connecting to regular hub port (not UpLink port), you must use a cross-cable. Please make sure that your network cables meet the networking requirements above.

Q: Why can't my PC access the Router?
A: Please make sure that all devices communicating with the device are using the same channel (and use the same SSID). Otherwise, your PC will not find the wireless Router.

Q: My PC cannot access the Internet.
A: First check whether the PC can ping the interface Ethernet IP address of this product successfully (default value is 192.168.1.1) by using the ping application. If the ping application fails, please check the connection of the Ethernet cable and check whether the states of LEDs are in gear.

If the PC uses private IP address that is set manually (non-registered legal IP address), please check:

1. Whether IP address of the PC gateway is legal IP address. Otherwise please use the right gateway or set the PC to obtain an IP address automatically.
2. Please confirm the validity of the DNS server appointed to the PC with DSL operator. Otherwise please use the right DNS or set the PC to obtain an IP address automatically.
3. Please make sure you have set the NAT rules. Convert private IP address to legal IP address. IP address range of the PC specified should meet the setting range in NAT rules.
4. The Central Office equipment may be experiencing technical issues.
5. The country or the wireless network type you selected is wrong.

Q: Why can't my PC browse a Internet web page?
A: Please make sure DNS server appointed to the PC is correct. You can use ping application program to test whether the PC can connect to the DNS server of the DSL operator.

Q: Why did the initialization of the PVC connection fail?
A: Be sure that cable is connected properly from the DSL port to the wall jack. The DSL LED on the front panel of the DSL router should be on. Check that the VPI, VCI, type of encapsulation and multiplexing setting is the same as what you collected from your service provider, Re-configure DSL router and reboot it. If you still cannot solve the issue, you may need to verify these variables with the service provider.

If further assistance is needed, please contact your local service provider!